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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,255	07/03/2003	Mary Wilkes Eubanks		6006
7590	06/16/2006		EXAMINER	
Mary Wilkes Eubanks 8 Pilton Place Durham, NC 27705			ROBINSON, KEITH O NEAL	
			ART UNIT	PAPER NUMBER
			1638	

DATE MAILED: 06/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/614,255	EUBANKS, MARY WILKES
	Examiner Keith O. Robinson, Ph.D.	Art Unit 1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 21 December 2005.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 2-6 and 8-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 2-6 and 8-22 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

DETAILED ACTION

1. The finality of the action mailed March 13, 2006 is withdrawn because the Examiner has discovered art that had not been previously addressed. Applicant should address and/or acknowledge the Interview Summary mailed 6 June 2006 in response to this office action. The content of the Office action mailed 13 March 2006 is included in its entirety in this Office action.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action, mailed August 11, 2005 and the following **second non-final** Office Action is set forth.
3. The amendment of claims 2 and 8, the cancellation of claims 1 and 7, and the addition of new claims 18-22, filed December 21, 2005, have been received and entered in full.
4. Applicant is advised of the requirements under 37 CFR 1.121(c)(1) which states; All of the claims presented in a claim listing shall be presented in ascending numerical order. Consecutive claims having the same status of "canceled" or "not entered" may be aggregated into one statement (e.g., Claims 1-5 (canceled)). The claim listing shall commence on a separate sheet of the amendment document and the sheet(s) that contain the text of any part of the claims shall not contain any other part of the amendment. The Examiner notes that new claims 18-22 have been submitted on a sheet that contains Applicant's arguments concerning the Nonstatutory Double Patenting rejection of record. Any subsequent amendment to the claims must comply with 37 CFR 1.121(c)(1), or the amendment will be held as nonresponsive.

5. Claims 2-6 and 8-22 are under examination.

Applicant's amendments to claim 3, in the amendment to the claims filed December 21, 2005, have overcome the claim objection set forth in the previous Office Action mailed August 11, 2005.

Response to Arguments

Claim Objections

6. The claim objections for claims 4-6 and 9-17 are maintained for reasons of record set forth in the previous Office Action mailed August 11, 2005. Applicant does not specifically address the objection(s) to these claims.

New claims 18-22 are objected to because of the following informalities:

The claims should replace "A plant according to" to -- The plant according to --.

Double Patenting

7. Claims 2-6, 8-12 and 14 remain rejected and new claims 18-22, dependent upon rejected claims 8 and 10, are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 and 11 of U.S. Patent No. 5,750,828, published on May 12 1998, and filed August 22, 1995 for reasons of record as set forth in the Office Action mailed August 11, 2005, pages 2-4. Applicant's arguments filed December 21, 2005 have been fully considered but are not persuasive.

As stated in the previous Office Action mailed August 11, 2005 "[a] timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground

provided the conflicting application or patent is shown to be commonly owned with this application". Applicant has failed to provide a terminal disclaimer and therefore does not overcome the rejection.

Applicant argues that the presence of one or more of the novel restriction fragments claimed in claim 2 distinguishes the plants and materials claimed in claims 2-6, 8-12 and 14 as non-obvious because they mark the presence of mutant alleles that would not have been expected or predicted to occur in plants obtained by making crosses as described in the methods of the US Patent No. 5,750,828 (see pages 7-10 of the remarks filed December 21, 2005).

This is not persuasive. The US Patent No. 5,750,828 fails to teach or suggest that such methods would prevent mutant alleles; therefore, even though "it is common scientific knowledge that mutations are extremely rare events, occur at low frequencies and do not occur in clusters" there is no evidence that such mutations could not or would not occur in plants using the method of US Patent No. 5,750,828. In addition, the product of the method of claim 6 and product made of claim 7 of the patent appears to be the same as claims 8 and 9 of this application, for example. Applicant's finding of an unknown inherent property would not rule out this rejection because issuance of the claims of this application would appear to constitute an improper timewise extension of the "right to exclude".

Claim Rejections - 35 USC § 112, first paragraph – Written Description

8. Claims 2-6 and 8-17 remain rejected and new claims 18-22 are rejected under 35 U.S.C 112, first paragraph, as failing to comply with the written description requirement.

The claims contain subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. The rejection is repeated for the reasons of record set forth in the Office Action mailed August 11, 2005, pages 4-7.

Applicant argues that for claims 2-6 and 8-12 the specification provides detailed genetic description of the *Tripsacum* and *Zea diploperennis* parents and *Tripsacum-Zea diploperennis* recombinant in Table 4 (see page 11 of the remarks filed December 21, 2005).

This is not persuasive. The mere listing of uncharacterized RFLP fragments does not provide an adequate written description. The claims are broadly drawn to plants and parts thereof, which as discussed in the previous Office Action are not adequately described. One skilled in the art would not be able to determine if Applicant was in possession of the claimed plants based simply on RFLP fragment sizes.

Applicant argues that for claims 13-17 the specification identifies precise maize plants introgressed with genes from *Tripsacum-Zea diploperennis* recombinants that exhibit the traits of the claimed claims (see page 12 of the remarks filed December 21, 2005).

This is not persuasive. As stated in the previous Office Action mailed August 11, 2005 pages 5-6 there is no written description for the broad genus of claimed plants. In addition, new claims 18-22 are rejected for lack of written description for the reasons of record for claims 13-17 because the specification fails to provide a written description of

the broad genus claimed plants. Applicant does not describe what structural feature of the claimed plant would produce the claimed property. Applicant states that there is evidence provided in the specification for claim 13 (i.e. a plant having root aerenchyma), but the specification does not state that the claimed plants are publicly available. In addition, Tables 2 and 3 do not describe the claimed plant because the mere listing of RFLP markers would not reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Applicant states the same arguments for claims 14-16 in using Tables 2 and 3 as evidence (see pages 12-14); however, the Examiner maintains the same reasons for rejection as stated above for claim 13.

Claim Rejections - 35 USC § 112, first paragraph - Enablement

9. Claims 2-6 and 8-17 remain rejected and new claims 18-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The rejection is repeated for the reasons of record set forth in the Office Action mailed August 11, 2005, pages 7-10.

Applicant argues that the specification provides a detailed genetic description in Table 4 of the *Tripsacum* and *Zea diploperennis* parents used to produce the claimed hybrid plants of claims 2-6 and 8-12 (see pages 14-16 of the remarks filed December 21, 2005).

This is not persuasive. Table 4 does not enable one skilled in the art to make and use the claimed hybrid plants. Table 4 only lists RFLP fragments for an uncharacterized *Tripsacum* plant and an uncharacterized *Z. diploperennis* plant. It would require undue trial and error experimentation to screen the broad genus of *Tripsacum* and *Z. diploperennis* plants to determine which would possess the genes associated with the RFLP markers listed in Table 4. In addition, one skilled in the art would have to determine which, if any, hybrid combinations would contain the RFLP markers listed in Table 4. Though it "would be common knowledge to one skilled in the art [that] diploid and tetraploid *Tripsacum dactyloides* are commonly found...as a roadside weed, can be purchased from a number of seed companies and obtained through the USDA Germplasm Resources Information Network" (see page 15 of the remarks filed December 21, 2005), this does not enable one skilled in the art to make and use the claimed hybrid plants and parts thereof. One skilled in the art would still require undue trial and error experimentation to screen the broad genus of claimed plants to determine which possessed the claimed RFLP markers. Applicant states that "[a] sample comprising at least 2500 seeds derived from crosses between *Tripsacum dactyloides* and *Zea diploperennis* have been deposited with ATCC having the accession of ATCC75297" (see page 15 of remarks filed December 21, 2005); however, there is no indication of such a deposit in the specification, thus it is unclear what are the conditions of the deposit. It is also unclear which hybrid Applicant considers to be the invention. For example, Applicant states a hybrid produced from the cross of *Tripsacum dactyloides* and *Zea diploperennis* have been deposited with ATCC having

the accession of ATCC75297 (see page 15 of remarks filed December 21, 2005) and also a hybrid produced from the cross of *Zea diploperennis* and *Tripsacum laxum* (see page 16 of remarks filed December 21, 2005). It would require one skilled in the art undue trial and error experimentation to screen all the plants of *Tripsacum dactyloides*, *Tripsacum laxum* and *Zea diploperennis* to determine which plants possess the genes associated with the restriction fragments of the claimed invention. Also, it is known in the art that there is variability among species. Therefore, plants selected as parents of the cross of *Tripsacum dactyloides* and *Zea diploperennis* would produce different hybrids depending on their genetic composition, thus without knowing the exact parents used in the invention one skilled in the art would not know how to make or use the claimed invention.

Applicant argues that the specification provides guidance for plants of claims 13-17 (see page 17 of the remarks filed December 21, 2005).

This is not persuasive. The Examiner maintains the rejection set forth in the previous Office Action mailed August 11, 2005, pages 9-10). This rejection also applies to new claims 18-22. As stated in the previous Office Action, the specification does not teach how one skilled in the art would be able to differentiate between the claimed plants and other plants having the same characteristics. Also, it is uncertain if any of the claimed plants are publicly available.

Applicant's arguments regarding the unpredictability of crossing *Zea spp.* and *Tripsacum spp.* is persuasive (see page 18 of the remarks filed December 21, 2005).

Claim Rejections - 35 USC § 102

10. Claims 2-6 remain rejected under 35 U.S.C. 102(b) as being anticipated by Eubanks (Theor. Appl. Genet. 94: 707-712, 1997).

Applicant argues that the claimed invention is distinguished from the prior art by the surprising and unexpected finding that different recombinant plants obtained from crossing different *Tripsacum* parents and different *Zea diploperennis* parents carry a high rate of the same mutant alleles (see pages 19-20 of the remarks filed December 21, 2005).

This is not persuasive. In the absence of evidence to the contrary, Applicant has not sufficiently established the instantly claimed product is different from the product disclosed in the prior art. MPEP 2112.01 states “[w]here the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. See *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). “When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.” *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d at 1255, 195 USPQ at 433. See MPEP 2122 [R-3] which states that “[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art’s

functioning, does not render the old composition patentably new to the discoverer.” *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). >In *In re Crish*, 393 F.3d 1253, 1258, 73 USPQ2d 1364, 1368 (Fed. Cir. 2004), the court held that the claimed promoter sequence obtained by sequencing a prior art plasmid that was not previously sequenced was anticipated by the prior art plasmid which necessarily possessed the same DNA sequence as the claimed oligonucleotides. The court stated that “just as the discovery of properties of a known material does not make it novel, the identification and characterization of a prior art material also does not make it novel.”

The Examiner maintains the rejection for reasons of record set forth in the previous Office Action mailed August 11, 2005, page 11).

11. Claims 8-12 and 15 remain rejected under 35 U.S.C. 102(b) as being anticipated by Eubanks (Plant Patent 7,977, September 15, 1992) and claim 14 remains rejected and new claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Eubanks (Plant Patent 9,640, September 3, 1996).

Applicant argues that the cited prior art describe hybrids between *Tripsacum dactyloides* and *Zea diploperennis* that the plants in the cited art contain more than one of the restriction fragments in claim 2 and is distinguished from the prior art by the surprising and unexpected finding that different recombinant plants obtained from crossing different *Tripsacum* parents and different *Zea diploperennis* parents carry a

high rate of the same mutant alleles (see page 20 of the remarks filed December 21, 2005).

This is not persuasive. In the absence of evidence to the contrary, Applicant has not sufficiently established the instantly claimed product is different from the product disclosed in the prior art. MPEP 2112.01 states “[w]here the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). “When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.” *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d at 1255, 195 USPQ at 433.

The Examiner maintains the rejection for reasons of record set forth in the previous Office Action mailed August 11, 2005, pages 11-12). In addition, the plants in the prior art would inherently possess the properties of the claimed invention. See MPEP 2112 as discussed above.

New Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 2-6 and 8-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Eubanks (U.S. Patent No. 5,330,547, July 19, 1994). The claims read on plants produced by crossing a *Tripsacum* plant with a teosinte plant, wherein said plant contains one or more restriction fragments identified by one or more molecular marker-enzyme combinations.

Eubanks discloses plants produced by crossing a *Tripsacum* plant with a teosinte plant (see column 8, line 60 to column 11, line 48). The plants in the prior art would inherently possess one or more of the restriction fragments claimed in the invention because both plants use the same parents, i.e., *Tripsacum* and teosinte. See *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985), which teaches that a product-by-process claim may be properly rejectable over prior art teaching the same product produced by a different process, if the process of making the product fails to distinguish the two products. See *In re Best*, 195 USPQ 430, 433 (CCPA 1997), which teaches that where the prior art product seems to be identical to the claimed product, except that the prior art is silent as to a particularly claimed characteristic or property, then the burden shifts to Applicant to provide evidence that the prior art would neither anticipate nor render obvious the claimed invention.

Conclusion

14. Claims 13, 16, 17, 18, 19, 20 and 22 are deemed free of the prior art given the failure of the prior art to teach or suggest a maize plant that contains one or more restriction fragments, produced by crossing a *Tripsacum*/teosinte hybrid with a maize

plant and wherein the hybrid from said cross is distinguished by the presence of root aerenchyma, improved grain quality, tolerance to acid soils, resistance to aflatoxin, resistance to corn borer, and tolerance to low nitrogen.

15. No claims are allowed.
16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith O. Robinson, Ph.D. whose telephone number is 571-272-2918. The examiner can normally be reached on Monday - Friday 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on (571) 272-0975. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Keith O. Robinson, Ph.D.
June 6, 2006

DAVID H. KRUSE, PH.D.
PRIMARY EXAMINER

